At page 1, line 9, please replace the heading there with:

BACKGROUND OF THE INVENTION

At page 1, lines 10-19, please replace the paragraph there with:

A sizable portion of investment vehicles available in today's financial markets are universally characterized as fixed income securities. Exemplary fixed income securities will encompass government bonds, bills and notes auctioned at regular intervals by the U.S. and other foreign governments to finance governmental activities. These, of course, are some of many types of fixed income securities, others include corporate bonds, municipal bonds, etc. The common thread running between all fixed income securities is the payment of a set return to the investor over the life span of the security.

At page 1, line 20 through page 2, line 2, please replace the paragraph there with:

There are two forms of fixed income return to the investor. The first involves the provision of coupon payments at regular intervals, at the stated interest rate of the security. For example, a ten-year note may specify an 8% rate of interest on a $1,000 par value with coupons coming due twice each year for ten years. This translates to two $40 payments to the holder of the note for ten years with a final payment of $1040 (principal and interest). The other form of bond is called a zero coupon, or discount bond which provides no payment except for the final return of the face value of the bond at a specified date (e.g. ten years from issuance). The discount bond is sold at some fraction of its face value, with the interest rate discount being a function of this and the term of the bond.

At page 2, lines 10-19, please replace the paragraph there with:

Treasuries have characteristic properties that make them especially useful for the purposes of the present invention and, therefore, are used exclusively in the following discussions, with the fundamental tenet that the principles may be applied to other types of fixed income securities without departing from the inventive concepts. One important attribute of treasuries, in the context of the present invention, is the minimal and uniform default risk; the issuance of U.S. government paper removes the default risk as a defining criteria in the relative pricing of treasuries in the market place.

At page 3, lines 21-27, please replace the paragraph there with:

Treasuries are sold by the government to fund projects, mandated payments and make strategic investments that cannot be paid by current receipts. Treasuries are purchased by individuals and institutions for a variety of reasons, including the protection of principal with a low risk investment vehicle and the generation of known future cash flows to fund the needs of, e.g., pension participants.

At page 3, line 28 through page 4, line 8, please replace the paragraph there with:

As can be realized by the foregoing description, the very size and diversity of the treasury market implicates an unprecedented level of sophistication by market participants in the pricing and transactions involving these securities. The very complexity associated with the transactions and the scale of trading undertaken by institutional participants necessitates a rigidly structured approach in trading. The capital at stake and the fluidity of future commitments make it critical to have a method of measuring the performance of portfolio managers, so that plan sponsors for the pension plans and the like can precisely determine whether the capital under their control is properly invested.

At page 7, line 25 through page 8, line 3, please replace the paragraph there with:

Turning now to FIG. 1, the overall information paths of the present invention are presented in block diagram form. Beginning with block 10, market data is collected from a plurality of on-line terminals operated by traders within the relevant bond market sector. A continual exchange of information flows between the traders, depicted in block 10, and the system proprietor, block 20, i.e., as bids, offers and trades are transacted in real time. This information is collected by the system proprietor and entered into the data processor database.

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At page 8, lines 19-31, please replace the paragraph there with:

The foregoing operation will result in the final real time index value in terms of portfolio price, portfolio yield to maturity (YTM) and portfolio duration for distribution within the fixed income investment community. In the context of the present invention, three segments of this community are provided with the data. At block 90, system proprietors involved in automated options processing are provided the index values for quantifying and closing specific options positions pursuant to the trading of option contracts on the indexed portfolio. In a similar manner, at block 110, the portfolio index data is provided to system proprietors regarding futures contracts to permit proper transactions in closing of future contracts based on the portfolio index.

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At page 11, lines 15-22, please replace the paragraph there with:

Assuming a negative response to test 230, logic continues to test 270 wherein the instant transaction is qualified as an active (most recently auctioned issue) treasury. A positive response to test 270 branches to block 280. At block 280, the current transaction data is

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assigned into the matrix of data values for actives A(I, N). Alternatively, a negative response to test 270 bypasses block 280 and the security will remain in the X(I, N) file set.

At page 12, lines 6-18, please replace the paragraph there with:

Continuing with Figure 2, test 290 queries whether a given security requires qualification. A positive response branches logic to block 300, where the first criteria applied involves measuring the spread between the bid and ask price currently quoted, SPD(I, N). At test 310, the current spread for that security is compared with a preset price spread maximum value, SPD_{max}. This preset spread limit is adjustable and may be initially set at 5/32; i.e., a difference between bid and ask sides of the market of 5/32. A positive response to test 310, branches to block 320 wherein the system discards the price information for that security. This data is removed from the data set because such a wide spread reflects unusual market conditions for that security.

At page 12, lines 19-26, please replace the paragraph there with:

A second criteria for retaining data involves comparing current bid/ask pricing with recent bid/ask pricing for differing securities. For example, if the current ask price of a given security is less than a recent bid price of the same or analogous security, this reflects a rapid shift in market conditions rendering the recent data unreliable. This process is depicted in test 330, which is performed after performing block 320 or after a negative response to test 310, with a positive response branching to block 340 for the removal of the disqualified data.

At page 12, line 27 through page 13, line 4, please replace the paragraph there with:

The remaining data sets are thereafter stored in matrix address format. After removing disqualified data at block 340, determining a negative response to test 330, or determining a negative response to test 290, at block 350, the active data is stored at A(I) and, at block 360, the inactive data is stored at matrix address X(I). This is repeated for each security on the data set via next command, at block 370, and continues in real time via block 380. In fact, except for the closing data, most, if not all, incoming transactions will be received on an asynchronous basis thereby creating a fluid database for processing in connection with the following logic commands.

At page 14, line 25, please replace the line there with:

Coupon Date_X(I,J) = date of Jth coupon for X(I)

At page 15, equation (1), around line 10, please replace the equation there with:

$$\text{Price\_P(I)} = 100 - 100\left(\frac{\text{Date\_P(I)} - DD}{360}\right)\text{Discount\_P(I)}$$

At page 15, line 16, please replace the equation beginning "X= ..." with:

$$X = 1 + \frac{rP(I)}{2};$$

At page 15, around line 18, please replace the equation beginning "Y= ..." with:

$$Y = \frac{\text{Date\_P(I)} - DD}{(\text{Coupon Date\_P(I, N+1)} - \text{Coupon Date\_P(I,N)}};$$

At page 15, before line 20, please insert:

100 is the face value of the security; and

360 is the convention for the number of days in a year for a T-bill security.

At page 15, equation (3), around line 24, please replace the equation there with:

$$rP(I) = 2*\left(\left(\frac{1}{\left(1-\frac{(Date\_P(I)-DD)*Discount\_P(I)}{360}\right)}\right)^{Z} - 1\right)$$

At page 16, lines 1-7, please replace the paragraph there with:

Assuming a positive response to test 450, the security is coupon bearing and logic proceeds to block 500, et seq., for the discounting of the security and all of its associated coupons for the spot rate determination. The first step is to adjust the security price for accrued interest associated with the next coupon payment. This is accomplished with the following relationship:

At page 16, lines 13-25, please replace the paragraph there with:

At block 510, the system sets the number of remaining coupons associated with the instant security TC to act as a counter for the iterative ensuing processing. This is initiated by loop command 520, block 525 and test 530. At block 525 and test 530, the system determines whether the coupon date associated with the instant security matches the maturity date of a security in the P(I, N) database. If so, the spot rate for that coupon is calculated, as above, using the price data at block 535; if a match is not found with an existing maturing security, the system logic branches to block 540 and interpolates from existing maturity dates on either side of the coupon date. The use of linear interpolation is a reasonable approximation, as the maximum length of time between maturing securities is six months.

At page 16, lines 26-30, please replace the paragraph there with:

After performing the operations at blocks 535 or 540, this process is repeated for each value of J, via block 550, and then the resultant data is used to calculate the spot rate for the Ith security, rP(I, N), at block 560. This is repeated for the entire set of securities from the closing price data, at block 570, and stored for subsequent use, at block 580.

At page 17, lines 1-14, please replace the paragraph there with:

Use of closing data from the Federal Reserve provides a complete set of data at a set point in time. After time, it becomes stale and needs to be updated rapidly with incoming asynchronous data on current transactions taking place in the market. This is accomplished via the flow path depicted in Fig. 4. Logic conceptually begins at start block 600 and inputs the data for the set of qualified actives in real time (i.e., within seconds of actual changes in a security price in terms of offer, bid and trade values) at block 610. The data for the actives A(I, N) is compared at test 620 to the existing proper set P(I, N-1) for the previous time cycle (N-1) to discern whether new information is available on an existing security. If yes, logic branches to block 630 and the new price data is used to update the spot rate for that security, via block 640.

At page 17, line 24 through page 18, line 3, please replace the paragraph there with:

The spot rate data set, as continuously updated with new trading information, is used to price a generic portfolio of select securities as expressed in terms of price relating to par, yield to maturity (YTM) and duration. This is accomplished for the exemplary portfolio described above by the logic path presented in Fig. 5. Logic conceptually begins at start block 700, followed by test 710, which determines whether the data set is closing or updated continuously; if closing (yes to test 710), logic

proceeds to block 730 and the proper closing data on the term structure is used. If asynchronous (no to test 710), the update set of data is used, block 720.

At page 18, lines 4-14, please replace the paragraph there with:

In either event, the previous index values for the portfolio are loaded, block 740, and then iteratively processed with the new market data. More particularly, the system iteratively determines the net present value for each of the four generic securities in the portfolio, via the counter in block 750, including each coupon, via the counter in block 760, by correlating the coupon and maturity dates for the generic issues with the data set for spot rates, via the counter in block 770; if a match occurs via test 780, the matching spot rate in the data set is used to calculate the NPV of the coupon, blocks 790 and 795. This is repeated for each coupon, J, via block 820, and each generic security in the portfolio, K, via block 830. If no match is found at test 780, the system tries the next security, via block 840.

At page 18, lines 15-21, please replace the paragraph there with:

Once the NPV is set for all of the components in the portfolio, the system calculates the portfolio price, block 850, the yield to maturity, YTM_F, block 860, and the portfolio duration, block 870. This information is displayed and made available to the associated network as an index, updated in real time by current price data, in a manner analogous to the S & P 500 and Dow Jones 30 Industrials at block 880.

At page 18, lines 22-29, please replace the paragraph there with:

In a separate aspect of the present invention the foregoing index is used as the measure of current valuation in support of a futures market based on an underlying

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portfolio for the index. Through an interconnected data network augmented with access to centralized brokers by telephone connection, the system offers automated electronic executions of futures and options contracts on the index for, e.g., treasury notes and their corresponding cash security equivalents.

At page 18, line 30 through page 19, line 11, please replace the paragraph there with:

By viewing through vendors in real time the price and yield of the portfolio, index traders, investors, pension fund managers, and other participants make determinations of market valuations of the duration sized portfolio. In so doing, bid, offer and execution decisions are implemented instantaneously by traders. These decisions

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are enacted through computer terminals that are interconnected through international data networks and processors to effectuate in real time the display of quantities for bids and offers and the "hitting" and "taking" of those bids and offers which then result in an executed trade. These trades are then electronically displayed and distributed to a clearing processor and at the same time to data vendors for redistribution to the worldwide financial community.

At page 19, lines 12-23, please replace the paragraph there with:

One function of the futures transaction processor is the determination of the least expensive portfolio of securities deliverable pursuant to a futures contract at the delivery date. Futures contracts based on the index determined above will require delivery of a combination of securities having 2, 3, 5 or 10 year maturities that, in combination, match the index duration and further comprise at most 50% of any one issue (e.g. 3 year notes). Given this criteria, at the delivery date, the system scans the market for 2, 3, 5 and 10 year notes, testing each

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combination of current issues to provide the least expensive matching combination and providing a delineation of the least expensive combination.

At page 19, lines 24-31, please replace the paragraph there with:

The system attributes described above may be more clearly understood in the context of the flow chart depicted in Fig. 6. Beginning with block 900, the system collects in real time the market positions of participating fixed income security traders as expressed in their various bid, offer and trade price data. This information is collated and conformed to a common format, block 910, and coupled with the existing treasury database, block 920, to discern a futures conversion factor, block 930.

At page 20, lines 1-11, please replace the paragraph there with:

The first operation is to organize the data into respective maturities that are associated with the specific index governing the futures contract obligations. This is represented by the selection processor, block 940. The data for each class of securities, i.e., 2, 3, 5 and 10 year maturities, is then sorted by price delineating the least expensive note within each class, block 950. The linear programming module, block 960, uses the sorted collection of notes in a minimalization algorithm that searches by trial and error for the least expensive portfolio that conforms to the delivery requirements of the futures contract.

At page 20, lines 12-24, please replace the paragraph there with:

The least expensive portfolio data is distributed three ways; first it is provided through the data vendors, block 970, to the financial community. It is also directed to the options parameter processor, block 980, for support of the transactions on the various options exchanges. The